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18 May 2000

Mr. Scott Hansen, P.E., SR-6J
Remedial Project Manager
U.S. Environmental Protection Agency, Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

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Re: Oversight Report, Skinner Landfill, West Chester, Ohio

Dear Mr. Hansen:

Roy F. Weston, Inc. (WESTON®) is pleased to submit an oversight report for well abandonment by the PRPs at the Skinner Landfill site. The oversight was provided by WESTON staff members from Miamisburg, Ohio. The oversight report includes a summary of daily activities, photo-documentation, and copies of the field notes.

If you have any questions please contact me at (847) 918-4051.

Very truly yours,

ROY F. WESTON, INC.

Omprakash S. Patel
Site Manager

OSP:ts

Enclosure

CHLAN01\WP\A\WO\RAC\032\28604LTR.WP8

RFW032-2B-AFLA

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**REMEDIAL ACTION OVERSIGHT
MONITORING WELL ABANDONMENT
OVERSIGHT REPORT
SKINNER LANDFILL
WEST CHESTER, OHIO**

May 2000

Prepared for

U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, Illinois 60604

Document Control No. RFW032-2B-AFLA

**OVERSIGHT OF MONITORING WELL ABANDONMENT
AT SKINNER LANDFILL
WEST CHESTER, OHIO**

This report summarizes the field oversight of monitoring well abandonment conducted by Earth Tech and Bowser-Morner at Skinner Landfill in West Chester, Ohio. Photo documentation and copies of field log notes are attached.

9 December 1999

The following personnel were present for locating monitoring wells:

Julie Schucker (WESTON)
Pat Higgins (EarthTech)
Bowser-Morner Representatives

Thirty-two (32) monitoring wells were slated for abandonment. The well identifications, construction materials, and total depths when known are listed in the logbook. All site personnel walked the Skinner Landfill using the site map as a guide in order to locate the monitoring wells. A bulldozer was used to clear paths in the impassible areas. As the site was walked, it was observed that the following wells had already been abandoned prior to WESTON's arrival on site: GW-52, GW-28, and GW-53. A discharge, potentially leachate was observed flowing out of the bank located across from GW-11. A white vapor, identified as smoke, was observed coming out of the ground surface in the vicinity of monitoring well GW-21. Located wells were marked with caution tape. Four wells could not be located: GW-12, GW-14, GW-21, and GW-25.

14 December 1999

The following personnel were present on-site:

Julie Schucker (WESTON)
Laura Funk (WESTON)
Ron Roelker (Earth Tech)
Alan Wolfe (Bowser-Morner)
Jared Rogers (Bowser-Morner)

Bowser-Morner was already on site when WESTON arrived. Following introductions between Earth Tech and WESTON, Ms. Schucker left the site. As Earth Tech and WESTON tried to locate the drillers, it was observed that the following wells had been abandoned: GW-9, GW-10, GW-56, and GW-15. It was also later confirmed that the following wells had been pulled prior to WESTON's arrival on site: GW-11, GW-25, GW-50, GW-54, GW-55, and GW-57. Once the drillers were located Mr. Roelker left the site.

The drillers had difficulty in abandoning monitoring well GW-29 with the truck-mounted hollow stem auger (HSA) drill rig that was on site. The outer protective casing on GW-29 could not be pulled with the rig. A bulldozer was used to try to loosen the outer casing, but was unsuccessful. The driller indicated to WESTON that the well was set in bedrock, which was not anticipated and not addressed in the driller's scope of work prepared by the PRPs. The driller called Mr. Roelker to discuss the situation. Mr. Roelker was going to contact the US EPA to reach a decision.

A path was cleared to access GW-32 and GW-33. The driller decided a track-mounted rig would be needed to access these wells. Abandonment of GW-31 was completed by pulling the well from the ground.

15 December 1999

The following personnel were present for monitoring well abandonment:

Laura Funk (WESTON)
Alan Wolfe (Bowser-Morner)
Jared Rogers (Bowser-Morner)

A track-mounted HSA drill rig was mobilized to the site. A total of six (6) wells were abandoned on this date. Four of the wells were abandoned by pulling the well: GW-23, GW-18, GW-17, and B-5. The bottom 2.5 feet of screen for GW-17 apparently broke off during the removal. Forty feet of casing were removed from GW-17. A tremie pipe, required per the scope of work, was not used when this well was grouted.

The remaining two wells, B-8 and GW-19, were overdrilled with the HSA drill. No decontamination procedures were employed for the augers between well locations. The well identification for B-8 was mislabeled as B-5 on the well itself. Due to an entanglement between the drill rods and the well pipe, the bottom 10 feet of well screen was dropped back into the well. No further attempts were made to retrieve it. The mixture of grout used generally consisted of 100 lbs. of cement to 25-40 lbs. of bentonite. The mixture was observed to have a liquid-like consistency. The mixture was poured into the former well locations using a hose and nozzle apparatus.

16 December 1999

The following personnel were present for monitoring well abandonment:

Laura Funk (WESTON)
Alan Wolfe (Bowser-Morner)
Jared Rogers (Bowser-Morner)

Overdrilling techniques were employed in the abandonment of GW-20 after pulling attempts failed. This monitoring well was overdrilled to a depth of 40 feet where sand pack was encountered. The augers became bound in the subsurface material and stressed the capabilities of the rig. Two drill caps were broke trying to free the auger flights. The monitoring well location was left with approximately 25 feet of auger in the ground. The driller told WESTON that they would need to return with a more powerful rig when the access conditions are more suitable (i.e. frozen or dry ground). Two other wells (GW-27 and GW-51), that are located within the vicinity of GW-20 at greater depths, would also be abandoned at that time. The well identification for GW-51 appeared to be mislabeled on the well. The drilling crew spent the remainder of the afternoon widening the path to these wells.

17 December 1999

The following personnel were present for monitoring well abandonment:

Laura Funk (WESTON)
Alan Wolfe (Bowser-Morner)
Jared Rogers (Bowser-Morner)

A total of six (6) wells were abandoned on this date. Bowser-Morner was advised by Earth Tech that double cased wells and GW-29 (which was set in rock) could be grouted in place then broken off below grade if pulling attempts failed. The drillers returned to GW-29 and grouted it in place using a tremie pipe. A bulldozer was used to knock down the stick-up pipe. Abandonment for the following wells was completed by pulling techniques: GW-33 and GW-36. Monitoring wells GW-32, GW-35, and GW-38 were double cased and could not be pulled. These wells were grouted in place using a tremie pipe. A bulldozer was used to break off the stick-up pipe for GW-35. The stick-up pipe for GW-32 could not be broken off using the bulldozer and eventually the driller ended up pulling out the top 10 feet of casing. The outer stick up pipe on GW-38 had been cut on 16 December 1999. The inner stick up was pounded down using a sledgehammer.

The grout mixture used to seal the wells generally consisted of 150 lbs. of cement to 25 lbs. of bentonite. In accordance with the scope of work, wells less than 40 feet in depth were grouted by pouring the mixture into the hole. For wells where abandonment involved the use of a bulldozer to break off the stick up, the ground surface was generally graded to prevent a depression over the well area. For all other wells, the grout was pooled up at the surface.

27 March 2000

While on route to the site, Laura Funk of WESTON was notified by Earth Tech that abandonment activities were postponed due to precipitation over the weekend.

30 March 2000

The following personnel were present for monitoring well abandonment:

Laura Funk (WESTON)
Jenny Downard (Earth Tech)
Alan Wolfe (Bowser-Morner)
Jared Rogers (Bowser-Morner)
Charles Reed (Bowser-Morner)

WESTON met Earth Tech at the site entrance in the morning. Bowser-Morner had set up on well location GW-20. Ms. Downard summarized the site Health and Safety Plan for all personnel present.

A total of three (3) wells were abandoned on this date. The abandonment of GW-20 had been discontinued on 16 December 1999 with 25 feet of auger in the ground. The abandonment of GW-20 was completed using a truck-mounted HSA drill rig. The drillers were able to recover the auger flights and 10 feet of drill rod. The well casing and screen were removed. The abandonment of GW-27 could not be completed per the scope of work because GW-27 was double cased. According to the driller, the outer casing was drill pipe. This piping material is typically used as a temporary casing and removed following well installation. It is not typically used as a permanent casing material due to its cost. Earth Tech advised the drillers to grout the well in place and cut off the stick-up casing below grade. This was the approved methodology used to abandon the other double-cased wells on site. The well was grouted in place. The soil surrounding GW-27 was shoveled out in order to cut off the stick-up below grade. Bowser-Morner did not have the necessary equipment with them that day to cut the casing. The abandonment of GW-51 was accomplished through overdrilling techniques. The well was overdrilled to a depth of 75 feet. The casing and well screen were removed and the grout was introduced through the stem of the augers. The augers were removed and additional grout was added. The drillers did not bring a sufficient quantity of cement to the site to complete the grouting. They requested to fill the upper several feet with bentonite chips. At WESTON's suggestion, Earth Tech advised the drillers that per the scope of work the remainder of the hole should be filled with the cement-bentonite grout slurry.

During the morning meeting, WESTON had advised Earth Tech and Bowser-Morner of the grout constituent proportions required under the scope of work: approximately 100 lbs. of cement to 5 lbs. of bentonite powder to 8 gallons of water. The grout mixture used to seal the wells generally consisted of 300 lbs. of cement to 30-50 lbs. of bentonite. Enough water was added to the cement and bentonite to almost fill a 55-gallon drum. All three wells were grouted with the use of a tremie pipe.

Because the lock on the back gate had been broken, the drillers provided a lock to secure the site overnight.

31 March 2000

The following personnel were present for monitoring well abandonment completion:

Laura Funk (WESTON)
Alan Wolfe (Bowser-Morner)
Jared Rogers (Bowser-Morner)
Charles Reed (Bowser-Morner)

The stick-up casing for GW-27 was cut off below grade using a heavy-duty band saw. The depression created around the casing was filled in with the removed soil. The upper several feet of GW-51 were filled with grout. The grout was mixed in the following approximate proportions: 200 lbs. of cement to 20 lbs. of bentonite. Enough water was added to the mixture to half fill a 55-gallon drum.

WESTON placed a call to Earth Tech to inquire how the back gate of the site would be secured. Earth Tech said that they were having a lock made that was keyed alike to the other locks. Earth Tech planned to have the lock placed on the gate later that evening.

Summary

All wells slated for abandonment were sealed except for four monitoring wells (GW-12, GW-14, GW-21, GW-25). These monitoring wells could not be located.

Due to rig limitations, access conditions, and subsurface complications, the abandonment of three wells (GW-27, GW-20, GW-51) was not completed during the December field effort. Bowser-Morner had planned to return to the site with a more powerful rig when the ground froze or dried out. Following several postponements in March, Bowser-Morner returned to the site on March 30th to complete the abandonment.

All well abandonment activities took place in general accordance with the scope of work with the following deviations:

A tremie pipe was not used when GW-17 was grouted. Approximately forty feet of casing were pulled from this well; it appeared that the remaining 2.5 feet of screen had broke off during removal.

The bottom 10 feet of well screen was dropped back into B-8 during abandonment as a result of entanglement with the drill rods.

The cement grout used to seal the wells was not mixed in the exact proportions as stated in the scope of work. The mixture of grout used during the December abandonment activities generally consisted of 100 lbs. of cement to approximately 15-40 lbs. of bentonite. The water was pumped directly into the mixing chamber so WESTON was unable to determine the quantity used. The mixture was observed to have a liquid-like consistency. The mixture of grout used during the March abandonment activities generally consisted of 300 lbs. of cement to 30-50 lbs. of bentonite powder. Enough water was added to the mixture to nearly fill a 55-gallon drum.

For all wells not abandoned in place, the grout was pooled up at the surface, but the wells were not rechecked after the grout had dried to determine if settling had occurred. It is recommended that the grouted well locations be checked to see if settlement has occurred. If significant settlement has occurred than a corrective action plan be submitted.

Four double cased wells and one bedrock well were present. These conditions were not addressed in the scope of work. According to Bowser-Morner, Earth Tech was advised by the US EPA that these wells could be grouted in place and the stick-up pipe should be broken off below grade. These wells were abandoned in accordance with these directions.

PHOTO-DOCUMENTATION

ATTACHMENT A SITE PHOTOGRAPHS

Photograph List

- Photograph 1: Pulling of GW-23 casing, view looking south.
Photograph 2: Pulling of GW-18 casing, view looking east.
Photograph 3: Pulling of GW-17 casing, view looking east.
Photograph 4: Overdrilling of GW-20, view looking north. Augers are bound.
Photograph 5: Grouting of GW-29 via tremie pipe, view looking west.
Photograph 6: Double casing of GW-32.
Photograph 7: Completion of GW-35 grouting. GW-35 was double cased.
Photograph 8: Attempt to break off stick-up pipe for GW-35 using the bull-dozer.
Photograph 9: Completion of abandonment of GW-35. Area was slightly graded during the stick-up removal.

Photograph 10: The removal of the upper ten feet of casing following the attempt to break off the stick-up from GW-32

Photograph 11: Grouting of GW-38 in place
Photograph 12: Completion of abandonment of GW-38.
Photograph 13: Use of spear to remove casing from GW-20, view looking southwest.
Photograph 14: Double casing of GW-27. Outer casing is drill pipe.



Photograph 1: Pulling of GW-23 casing, view looking south.



Photograph 2: Pulling of GW-18 casing, view looking east.



Photograph 3: Pulling of GW-17 casing, view looking east.



Photograph 4: Overdrilling of GW-20, view looking north. Augers are bound.



Photograph 5: Grouting of GW-29 via tremie pipe, view looking west.



Photograph 6: Double casing of GW-32.



Photograph 7: Completion of GW-35 grouting. GW-35 was double cased.



Photograph 8: Attempt to break off stick-up pipe for GW-35 using the bull-dozer.



Photograph 9: Completion of abandonment of GW-35. Area was slightly graded during the stick-up removal.



Photograph 10: The removal of the upper ten feet of casing following the attempt to break off the stick-up from GW-32. Prior to this action GW-32 had been grouted in place.



Photograph 11: Grouting of GW-38 in place.





Photograph 13: Use of spear to remove casing from GW-20, view looking southwest.



Photograph 14: Double casing of GW-27. Outer casing is drill pipe.

COPIES OF THE FIELD LOGS

12/9/99

J. Schuster

0850 at site waiting to meet Earth Tech
Representative Pat Higgins - driving
Support truck - Central Star building
from Peebles, OH is on site

0900 went over HASP - signed appropriate
pages & filled in sections as
required

0905 - still waiting for Earth Tech rep
to show up

0912 Pat on site - takes me back to
site by well GW-50

- wells to be abandoned

- b-5	PVC 20'
- b-8	PVC 17'
- GW-9	PVC 30'
- GW-10	PVC 15'
- GW-11	SS 19'
(GW-12)	* not found X
(GW-14)	* not found X
- GW-15	PVC 20'
- GW-17	PVC 43'
- GW-18	PVC 30'
- GW-19	PVC 35'
- GW-20	SS 51'
(GW-21)	* X
- GW-23	PVC 12'
(GW-25)	* X
- GW-27	SS 70'
- GW-28	SS 30'
- GW-29	* ✓
- GW-31	SS 19'
- GW-32	* ✓
- GW-33	* ✓

Schuck

12/9/99

GW 35	*
36	*
38	SS 48'
-50	PVC 31'
51	PVC 79'
-52	PVC 30'
53	PVC 18'
-54	PVC 26'
-55	PVC 19'
-56	PVC 14'
✓57	PVC 18'

- drilling firm in barren Manner -
renting drier from Central Sta

0930 - walking site

GW 52 PVC - pulled

GW 08 SS pulled

- picture #1 GW 52

- pict #2 GW 53 - casing pulled
out in 1 piece

1000 walking north side of site along
fence

- pict #3 "duck pond" on north
side of fence

- pict #4 bull drier clearing path

- Pat ~~was~~ talked w/ Butler &
said they pulled 4 wells out

1020 - still walking site boundary

- Butler may be able to
continue w/ well abandonment
later today when helper
arrives on site

1030 look at entrance

- reviewing maps

12/9/99 Schur
1050 leaving site - Pat is getting
by a faint V caution tape
- as leaving site - a Skinner
representative stopped me asking
what I was doing on site
- I explained who I work for &
represent and indicate why
I was on site. he said
if I have any problems come
& see him

1200 on site

- met Pat

- "neighbor w/ white beard"

approached ~~us~~ us

to ask what we are doing
etc. - Pat said he's met

this man before - he

lives in a trailer outside

of site fence

1235 - can't locate GW 12 - Pat

& I tried to measure it out -

but no evidence it is

here.

1243 picture #5 "leachate" flowing

out of bank - across from

GW-11 looking for GW 14

1315 - Pat went to look for GW 29

& I went to look for GW 14

picture #6 approx. area where

GW 14 should be - note

all the fill in area

Pat

Sketch
1336

12/9/99

Pat & I found GW 32, 33, 35, 4
- on way to look for GW 21
on landfill

1350 on top of landfill looking for
GW 21 - saw steam
coming out of landfill on
top

1410 back at vehicles - couldn't find
GW 21 need bulldozer to clear
path

1425 Pat & I walked back to top
of landfill waiting for
bulldozer to clear path
to GW 21

1450 clearing area to look for GW 21
- picture #7 is in vicinity of
GW 21 - steam is coming out
of ground surface - it could
also be smoke - it is white
vapor

1505 Pat went up with the bowser
- up to show him other wells
that he & I found
- I am with bulldozer & operator
looking for GW 21

1515 Could not locate GW 21
- going back to vehicles
- picture #8 - wells GW 17 & 18 that
are ~~not~~ slated for abandonment
note ~~to be higher~~ NO pools
of processing in air
- Pat told me that the drillers
inadvertently started pulling them

12/9/99

J Schuck

- one armed man stopped by no the end of landfill - asked Pat if needed any fill more - he said no.
- Pat told me 60017418 are slated for abandonment
- Could not find 4 of the 32 wells
- 4 wells are currently abandoned
- Pat went to show Mike well locations
- ~~Pat says~~ no abandonment will occur today
- Pat will call me in morning if they'll be on site - weather ~~forecast~~ forecast is calling for rain - heavy starting tonight ~~at~~ through noon tomorrow - they said they can't use rig if it's too muddy - only have truck mounted rig on site, no ATV

1548 - leaving site

J Schuck

J. Chubb

10/10/99

0800 waiting to hear from Pat if
the Dullers plan on coming to
site

- it had rained all night + it
is still raining

0820 calling Pat Higgins at office to
check on status

- Pat said he heard from Drilling
firm that they wouldn't
be on site today - he also
said Dullers may not be
able to work next week -
will call me later today
to let me know schedule
next week

J. Chubb

12/13/99

J Schuck

1010

→ called Pat Higgins at
his office
- he said that Bowen Quillers
had training Monday -
they are scheduled to
be on site Tuesday

1015

- I contacted OM Patel &
updated him

- USEPA re: Scott Hansen
312 886 1999

Contact Scott if can't
reach OM

- OM will call me back to
confirm when RFW needs
to be on-site

1500

Spoke w/ Ron ~~W~~ Roelke from
Earth Tech - they will be
on site tomorrow at 9:00 AM

- They did encounter a well
that is double-cased - its
abandonment is not
addressed in the SOW -

1505

called OM P. & left message

J Schuck

J. Schuch

13/14/99

0900

on site - met Jean Roubien
from Earth Tech.

- Laura Funk from WESTON
is on site to represent

USEPA during well at arden

- went over H&S

09:30

GW53 pass by this well. Was pulled
on the 8th

09:35

Pass wells 9 & 10 which had been pulled

09:40

Pass well 56 which has been pulled

09:55

Wells 17 and 18, protective casing
pulled, rising intact

10:00

Pass 88, intact

10:30

Located drill rig

10:30

Meet up with drillers. Say just built
road to well 29 and finished well 15
Alan said double cased well is
drill pipe that probably got stuck.

10:50

Set up on GW 29 - 29.5' deep

11:00

Trying to pull protective casing with
chains / rig. Can't pull it. Alan Wolfe
(driller) says it is set in rock.

11:05

Bring dozer back to see if can
wiggle it loose. Well and pipe
moving as one.

11:10

Use chain and dozer to try and
pull

11:20

Locate wells 32, 33, 35, 36

Drillers jump river to try and
find a better access way for rig.
Hill we originally came down is
steep and muddy

~~12/14/99~~

12/14/99

11:35

Clearing steep slope with rigger. Will use this entrance for 2 of the wells

11:45

Rig got stuck trying to set up on well. Pull out with derrick

11:55

Break for lunch

12:45

Alan Wolfe says well across bridge that should be accessible

13:00

Set up on well 31

13:05

Full protective casing (inner casing)
Pull out riser and screen - stainless steel
total depth was 19'

Alan Wolfe said there should be 15 wells left

13:10

Mixing up a bentonite-cement grout (Premium gel bentonite and Portland cement, pour mixture into hole

13:17

rinse out grout down and pour water mixture on ground

Empty out tank of water in rig.

Will be bringing an ATV tomorrow

13:25

Rig stuck have to use support vehicle to get out.

13:35

Left site. Drillers are transferring some equipment then will be leaving.

Make plans to return 8:30 tomorrow

~~12/14/99~~

12/15/99

Laura Funk

08:20 Arrive on site

08:55 Drillers arrive on site with track rig

09:10 Drillers unloading rig and fixing pulley to hold hook, laynard system

09:40 Hook up sleigh so can pull augers and water tank behind the dozer. New rig does not have on board room for this equipment

10:15 At well GW 23. Setting up

10:20 Alan Wolfe said he called EarthTech yesterday evening and told him about the well set in rock. Earth Tech was going to call EPA today

10:25 Removing protective poles surrounding well

10:30 Pull up protective casing on GW 23 (photo)

Ingr Casing
x7 12/15
and screen are pvc

10:32 Pull out screen and casing ~ 4 ft screen (photo)

10:45 Connect water hose to grout mixer. Add ~~one 50 lb bag of~~ ^{27 12/15} Portland cement and ~~one 50 lb bag of~~ ^{27 12/15} bentonite

10:47 Pour grout mixture into well hole. Also fill pole holes

11:05 Located well GW 17 and GW 18 (photo)

11:20 Finish removing ^{outside} casing from GW 18

11:22 Remove (pull out) ^{x7 12/15} 20 ft casing pvc (photo)

11:23 Remove 10 ft of screen

11:24 Remove outer protective casing from GW 17

11:30 Attempting to pull out well

11:40 Pulled out 10' of casing five inch section of screen on bottom

12/15/99

Laurie - Frank

- Alan Wolfe said the rest must have
broken off (about 2 1/2 ft)
- 11:45 Mix 2 bags cement with $\frac{3}{4}$ bag
bentonite (50 lb bags) $\frac{1}{2}$ bag
- 11:50 fill holes with grout mixture. Did
not tremie pipe GW17
- 12:00 Clear route from GW17 to GW20 with
dozer
- 12:50 Broke for lunch
- 13:40 Return from lunch
- 13:45 Drillers finish clearing and bring rig over.
- 14:10 Set up on well labeled B-5 but according
to the map it is B-8
- 14:15 Pulling outer casing out
- 14:25 Broke chain trying to pull outer casing
out
- 14:30 pulled casing out
well casing is not visible
Drillers ~~try~~ ^{struggle} to dig down to it
- 14:40 shovel breaks. Can hear particles
falling into the water
- 14:45 Pull up well using spear and
pipe. Well material is plumbing
pipe not well pipe (photo) accord to driller
- 15:00 Alan Wolfe got call. Were given
permission to grout up well if set
in rock and can't pull or drill
- 15:05 fluid retrieved about 3' pipe rest
would not pull up.
- 15:00 I asked if they planned to
over drill since couldn't pull.
A. Wolfe said they were just going
to grout it up

12/15/99

Shirley Frank

- 15:10 I asked A. Wolfe if he was directed to do this. He said no. He didn't think it would make much of a difference since screen was all that was left. I read him scope. He decided to overdrill.
- 15:15 Drill borehole about 8' deeper into hole.
- 15:30 Pull out rest of casing and screen. Screen is same material, (but not homemade) standard slot.
- 15:40 Mixing grout 2 bags cement, 1/2 bag bentonite.
- 16:00 Set up on B-5
- 16:05 Sleeting.
Pull out outer casing part of well comes too. Cut off. Pull out ^{inner} casing and ~ 2' screen, pvc
- 16:11 Set up on GW-19. Remove guard post
- 16:15 Remove (pull) outer protective casing.
- 16:25 Could not pull well. Begin augering
- 16:55 Have augered down 20', drill bits attach auger used on B-8
- 17:00 Augered down 25', total depth of well was 33'. Pulling augers up.
- 17:20 Well casing comes up when pull up rods well - steel
- 17:25 Driller trying to separate casing from rods
- 17:40 Pull out rods / casing. Lost bottom 10' of well pipe.
- 17:45 Mixing grout 2 bag cement 1/2 bag bentonite. Made to fill B-5 and GW 19

12/15/99

Laura C. Fink

17:50 Once drillers have ground mixed Weston
leaves site because almost too
dark to find car

17:50

12/16/99

Laura Funk

08:30 L. Funk arrives on site. Waiting on drillers.

09:00 Drillers on site

09:05 Fill up water tank on sleigh

09:05 L. Funk calls G. Horn and asks what my course of action should be in drillers deviate from scope. He said to inform them that this is a deviation and they need to have permission to do this. Document what is said.

09:30 Haul up to area where rig is set

09:45 Load equipment onto sleigh

10:10 Set up on GW20

10:15 Pull guard posts

10:17 Pull outer protective casing. Break up concrete.

10:25 Use spear to try to pull well

10:32 Could not pull well. Set rods in well hole. Total depth appears to be ~48'

10:40 Begin overdrilling GW20 using some of same augers from yesterday. No clean procedure has been used. Saw that I received does not state clean requirements.

11:15 Augering at 30' bgs. Rods have slipped down a few feet

11:30 At 40' bgs hit the sand pac. Pulling augers out

11:50 Augers are getting bound up in material. Drill cap breaks.

12:00 A. Wolfe calls Rouser. Mournier shop. They will bring out a new drill cap. Should be there between 1 and 1:30.

12/16/99

Lance Lumb

- 12:05 Take lunch
- 13:05 Return from lunch. Part has not arrived
- 13:20 Walk out to wells 53 and 55 to make sure they had been pulled
- 13:40 Back at vehicle. Part has not arrived.
- 14:15 Part arrived. Head back up to GW20 along with Bowser-Mourner mechanic. Since about a half hour before lunch drill rig has occasionally been stalling out.
- 14:55 Still trying to pull augers out of GW20. Rig stalling more often now. 25' of auger still in ground
- 15:00 Augers getting tighter as come up. Driller would like to cut augers off and leave in ground. I said I have no authority to tell them what to do and if they want to deviate from the scope they need to call Earth Tech. A. Wolfe calls his boss who will call Earth Tech
- 15:10 Replacement drill cog breaks
- 15:25 A. Wolfe calls boss back who told him to leave these 3 on top of hill till can get a truck up there (colder, drier) Tomorrow we will get 4 along the river and the 2 to be grouted into place
- 15:35 A. Wolfe said they will not abandon any more today since need to get another drill cog. If they have time they will do a road to get to the 3 on the hill
- 15:45 Bowser-Mourner's mechanic (John) is

12/16/99

going to cut the drill stem on
Gw 38

Lance Link

15:50 L. Link off site

Link

12/17/99

Jimmy Turner

06:35 Arrive on site. Orders on site preparing equipment.

07:01 Set up to grout GW29. This was 16" well set in rock.

07:05 Trailer using 30' of tremie pipe.

07:05 Mixing grout mixes about 1/8 - 1/4 bag of bentonite to 50 lb bag portland cement.

07:07 Seal well using tremie pipe. Pull ^{23' 14"} up tremie pipe then top off surface and around base of well.

07:10 Use drier to knock down stick up.

07:25 Set up ^{23' 14"} Head over to GW33.

GW33 - 13' deep

GW32 - double cased 44'4" - steel

07:35 Pull GW33.

Outer protective casing, inner casing and screen come out as 1 piece. well is ^{23' 14"} steel. screen is about 5' long.

07:41 Set up on GW ~~33~~ ³².

07:45 Were not able to pull outer casing.

07:50 Set 40' of tremie pipe into GW32 inner casing.

07:55 I asked A. Wolfe if he has specific guidelines for grout constituents. He said yes, but he doesn't measure anything out and is mixing what he always mixes. I asked if his guidelines were about 100 lbs portland cement to 5 lbs bentonite. He said yeah.

12/17/99

Laura

- 10:00 Mix 3 bags cement to 1/2 bag bentonite
- 10:05 Grouting GW 32 via tremie. Water is flowing out of well as grout is introduced
- 10:07 Pull up tremie pipe. Top off well casing with grout. Pour grout into GW 33. Allow grout to settle for a minute then top off
- 10:15 At GW 36 - 13.5'
GW 35 - 41.5' - double cased, steel
- 10:20 Set up ~~on~~^{on} GW 35. Pull out guard post
- 10:23 Try to pull out outer casing but could not
- 10:25 Set up on GW 36
Pull Guard posts
- 10:32 Pull out outer casing well comes with it. Well is steel with about 5 ft of screen
- 10:40 Mixing grout. Use 1/2 bag bentonite to 3 bags cement
- 10:40 Place 40' tremie pipe into GW 35
Grout GW 35 in place. Water pours out as grout is introduced
- 10:42 Remove tremie pipe. Top off. Pour grout into hole from GW 36
- 11:05 Build dore stick-up for GW 35. Smooth out ground over dored area
- 11:15 Back to stick up for GW 32. ~~for 11:17~~
Knock down stick up with dozer
- 11:20 L. Funk asked A. Wolfe if he was required to top off well locations with dirt. He said they wanted it level with the surface to avoid depressions. Drillers have been pooling grout on surface.

12/17/99

Larry Funk

- but as it settles depression may occur
- 11:45 Still working on breaking off the stick-up of well 32 with dozer
- 11:55 Hooked chain up to stick-up and pulled out along with 10' casing. Graded area with dozer. I asked A. Wolfe specifically what he had been advised to do for stick-ups of double cased wells. He said to break off below grade.
- 12:15 Back at gates. Brake for lunch
- 13:15 Return from lunch
- 13:30 Putting tremie pipe down GW 38 - 45' A. Wolfe says feels like a bailer is floating down there John cut off the outer drill casing yesterday
- 13:35 Mixing grout 3/4 bag bentonite to 2 bag cement
- 13:37 Water pouring out of well as grout introduced. Pull up tremie pipe. Tops off well with grout
- 13:40 J. Rogers used sledge hammer to pour down casing left sticking up
- 13:45 Pool up grout as surface
- 13:50 ~~13:50~~ A. Wolfe says they are finished. They need to round up their equipment
- 13:55 L. Funk off site

L. Funk

3/30/00

Laura T. -

08:10 Arrive at drive to site. Scheduled meeting spot for 8:30

08:20 Bowser - Morner arrive. They take truck mounted rig on site.

08:30 Earth Tech rig on site. Jenny ~~Downard~~ ^{EF 312} Come over to site

08:40 Meet drillers on top of hill. They are set up on GW 20. (Augers still in ground)

08:45 Jenny of Earth Tech goes over HASL Drillers sign. Drillers on site: Alan Wolfe, Jared Rogers, Charles Reed

~~08:50 Begin pulling augers from GW 20. EF 312~~
After review of HASL L Funk informs Bowser that grant proportions in scope of work need to be followed ~100 lbs cement to ~5 lb bentonite ~ 5 gal water

08:50 Bowser begin pulling augers from GW 20

09:00 Bowser measures depth in GW 27 - 67' 9" ground surface

09:07 Completed removal of augers from GW 20
25' auger removed

09:20 Set up to try and spear the inner casing for removal. Driller having to climb up on platform to manually shift because shifter broken

09:22 Spearer pulled out 2' casing - steel (photo)

09:24 Removed 40' casing, 10' well screen 10' drill pipe also removed

3/30/00

Long Run

09:20 Lowered 20' tremie pipe into ground

09:30 Mixing grout. 300 lbs cement
40 lbs bentonite. Enough water
was added to fill 55 gal poly
drum

09:40 Grout tremied into hole

09:45 Grout not to surface. Drillers
will stop off during grouting
of next hole

09:50 Set up on ~~FW~~ 27

Use hook and chain to pull
outer casing. Well is double
cased steel. Outer casing is
drill pipe ~~to~~ # 3130

Alan Waite said drill pipe is
used as a temporary casing
during well installation

~~1st casing~~ Drill pipe was probably
set too deep into rock and
they couldn't get it out

10:00 Jenny calls Ron Roelker to ask advice

Ron said to grout in place, break
off below grade. He said
that was approved by the
EPA

10:05 Put 20' tremie pipe into well

10:10 Mixing grout. 300 lb cement to
~ 50 lbs bentonite. Enough water
to fill 55 gal tank

10:15 Grouting ~~FW~~ 27 in place. Grout
allowed to spurt at surface. Tremie
removed.

3/30/00

Lan Anh

After tremie pipe removed grout
was poured in to fill rest of way
10:20 Grout poured into BW20 location
to top off. Estimated 20 gal grout
poured in

10:25 Rinsing out tremie pipes

10:30 Bend well casing so can cut it.

10:35 Talk to Jenny about what I
wrote down for grout mixture.

Still not exactly to scope of
work proportions.

10:40 Remove adjacent protective
pole

10:50 Set up on ⁴¹³¹²MW-51. TO - 77' ground surface
Pull protective outer casing.
Well - PVC

11:05 Drillers digging at hillside to allow access
for the swing area holding the augers

11:15 Put 50' drill rods into ⁴¹³¹²BW 51

11:20 Begin overdrilling MW 51.

11:30 Putting forth auger down.

11:45 Around 35' hit sand ⁴¹³¹²pre⁺layer

12:00 At 55' hit Sand face

12:05 Lunch

13:05 Return from lunch

13:20 Augered to 70' Well casing does
not come up when pull rods.

13:25 Auger to 75' ~~attempted~~ 4/3/30
Well still won't come up w/ rods

13:30 Removing rods. Junction loose so some left down.

13:35 Using spear to try and free casing
Casing comes loose on fourth try.

3/30/06

13:45 As pulling well. Red comes out too.
Only 10' retrieved. Thirty more
feet rod in ground

13:46 Two more rods removed w/ casing.
Last rod also must have come
unscrewed

13:50 Last rod at screen depth - removed
Bottom 10' of well is screen

All of well removed. All drill rods
recovered

13:55 fingers remain in ground. Lower 70
feet frame pipe into hole

14:05 Mixing grout: 300 lb cement to
40-50 lbs bentonite. Enough water
to fill 55-gal drum

14:10 As grout introduced through
frame well water purges out to
surface Bentonite used is
"Premium Gel"

14:15 Jenny 'Earth Tech' asks Alan Wolfe
about grout proportions used. He
says used mixture he always uses.
He says he doesn't measure just
goes by looks. He says use
6 bags (47 lbs per bag) Portland
Cement to 3/4 bag (50 lb per bag)
bentonite gel

14:17 Begin mixing more grout
Used ~~300~~ 300 lbs cement to ~30 lbs
bentonite. Enough water to fill
55 gal drum

14:30 Begin pulling auger. Pull out 30'

14:40 Fill hole with grout

3/30/00

Lynchburg

14:45 Pull out more augers

15:10 All of augers removed

15:15 Mixing grout. ~²⁰⁰~~300~~ lb cement to
²⁵~~40~~ lb bentonite ²⁵~~30~~ enough
^{3/4} water to fill 55 gal drum

15:20 Pour grout into hole to
top off

15:30 Mix more grout

~250 lbs cement to ~25 lbs bentonite
Plus enough water to 3/4 fill
55 gal ²⁵~~30~~ drum

15:35 Hole still not full.

15:40 Drillers hosing off augers w/ water
Jenny asks Charles about filling
the hole the rest of the way.
He says they're out of cement.

15:50 Drillers cleaning up site. They plan
to return tomorrow. They are
planning to fill the rest of
hole (at least 5') w/ bentonite
chips and to cut off well MW27
below grade. I told Jenny she
should call her boss since
bentonite chips are change in
scope. He says need to fill w/
slurry cement/bentonite. Jenny
informs drillers. Drillers just didn't
want to leave rig on site since if it
rains it may become stuck. No rain
is predicted.

16:10 Back at vehicles I call ^{On}~~John~~ Patei to
inform him of work done today and to
see if I should return for oversight tomorrow

3/30/00

Larry L. L.

~~16:30~~ ^{On} Says yes return tomorrow. Also would like to advise EarthTech to cover open hole.

16:20 I advise/recommend to Jenny of EarthTech the hole from mws1 be covered overnight. Jenny says that the lock to the back gate was broken. Since the drillers are leaving the rig and equipment on site she had them put one of their locks on the gate. She does not have a key and the drillers have left the site. No rain is predicted and access to the well location is pretty restricted (i.e. on ledge and mostly blocked by rig).

16:35 Left site. Weather today was cool in morning & foot, sunny in afternoon w/ a temp ~ 50°F

~~Larry L. L.~~

3/31/00

Laura In L

08:35 Arrive on site. Driller had planned arrival by 9

09:05 Driller on site

09:10 At MW22 location. Alan Wolfe using a heavy duty back saw to cut off stick up for well (well was grouted in place yesterday).

09:15 Filled in the depression made around the stick up. Area was smoothed out a little yesterday to allow room to maneuver saw. Soil placed brick in hole to level to ground surface

09:20 Back at GWS1. Setting up to mix grout

09:30 Mixed grout ~ 200 lbs cement to ~ 20 lbs bentonite to enough water to 1/2 fill 55 gal drum

09:35 Filled rest of GWS1 up with grout. Mounded grout at surface

09:40 Driller getting ready to leave site

09:45 L. Funk left site

09:49 L. Funk calls Ron Roelker about locking of back gate. He said they are having a lock made that is keyed alike to the front gate lock. Jerry is planning on stopping here late afternoon to evening to get lock on today.

~~L. Funk~~